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NATIONAL VETERINARY MEDICAL ASSOCIATION

PRESIDENT'S NEW YEAR MESSAGE TO MEMBERS

To All Members of the National Veterinary Medical Association

A YEAR ago, in commenting upon the major problem confronting the profession, it was stressed that "the profession must look further ahead than the immediate War situation: it is, in fact, imperative that a long-term policy embracing the *whole* profession be carefully considered and adequately planned without undue delay." In the interval a number of initial steps have been taken in this direction but the complete structure has not yet been adequately thought out.

There is a renewed determination on the part of the profession to avoid dissipating the results of its labours in wasteful disputes with other interested bodies and a more realistic appreciation of the fact that differences of view generally can be resolved by mutually sympathetic discussions. In the past year the Association has received much assistance in a variety of ways—some evident, others less evident—from the Ministries of Agriculture, Health, Food, Home Security, and Fuel and Power, the Colonial Office, the Farmers' Unions of England and Wales and of Scotland, many county War Agricultural Executive Committees, the Parliamentary and Scientific Committee, the various animal welfare societies, particularly those co-operating in N.A.R.P.A.C., a number of manufacturing firms, and both the agricultural and the general Press. Nor perhaps should we forget the generous help of the Lord Mayor of London in granting us the privilege of holding our annual luncheon in the Mansion House. With their co-operation the cause of the profession has been advanced in many ways but this is not to say that every difficulty has as yet been overcome.

The Council and Committees of the Association have worked hard during the year partly to clear the deck for a full consideration of the major problems of long-term policy and partly to further certain parts of this policy. The Survey Committee has continued its enquiries and will shortly put before Council its reports upon the diseases of sheep, artificial insemination in cattle, and calf-hood diseases. A joint committee of the Veterinary Officers and Public Health Committee and the Parliamentary Committee has prepared a report upon Meat and Milk Production and Control, and this has been presented to the Ministries of Health, Food and Agriculture. Progress is being made with the scheme for the control of certain diseases of dairy cattle thanks to the willing co-operation of the farmer and the practitioner. With the increasing experience of the satisfaction to be derived from a comparatively free hand to control disease in the herd, the enthusiasm of participating practitioners is growing, particularly as they are now able to secure a complete picture of the progress of their work in place of the disjointed view hitherto available from their previous irregular and often unconnected visits to a farm.

But solid as are these achievements they only touch the fringe of the greater problem of the utilisation of the profession for the betterment of the community of man and animals. In order to stimulate discussion in the divisions of the "National," in Council and in Committee and also in the hope that others might be encouraged to put forward their views in a helpful spirit, I reviewed the basic structure, as I see it, of a co-ordinated health service for animals in my presidential address. I had no desire to dogmatise but merely wished to present as clearly as I was able in a short address my present conclusions from much thought.

Another great problem before the profession is that of veterinary education. The Council of the Royal College has continued to give this matter careful consideration, a new examination syllabus has been drawn up and an agreement seems imminent with the University of Cambridge designed to enable a small group of veterinary students to take the first three years of study at that university. Furthermore the Veterinary Educational Trust has been formed and money is being raised for the purpose of improving our educational facilities. This basic problem of education is again one deserving of full consideration by each and every one of us.

And yet another fundamental problem destined to affect the future of our calling is likely shortly to require the calm and reasoned consideration of every member of the profession. It is no secret that the Council of the Royal College is considering the advisability of putting forward a Bill to prevent as completely as possible unqualified veterinary practice. Obviously if this can be achieved it will make conditions much more conducive to better veterinary service and should, therefore, receive our support. Clearly it is not advisable for the terms of the proposed draft Bill to be disclosed generally whilst it is undergoing modification in the Council chamber but no one will gainsay the need for full discussion by the profession at the earliest date.

It is the duty of each of us to study the question and the text of the proposed Bill objectively and so far as possible without bias, considering it from the viewpoint of the service of the profession to the community in the future rather than the temporary effect of its immediate impact.

In essence, then, my message for 1943 is—Let us each carry out his daily task in a full spirit of service to the community, thereby securing to himself that special satisfaction and a pride resulting from the knowledge of work well done. Let us give immediate thought to our organised future, to the essentials of a health service for all animals, to the problems of veterinary education, and to the need for a new veterinary surgeons' Bill to protect animals from unqualified practice. If we do these things in 1943 we shall make possible the post-war creation of an animal health service in keeping with the other great reforms we all hope to see arise out of the present deplorable conflict.

January, 1943.

W. R. Wooldridge.

QUESTIONS IN PARLIAMENT

Vitamin Preparations

Sir P. Hurd asked the Parliamentary Secretary to the Ministry of Food in view of the fact that only 24 per cent. of the mothers receiving priority milk are applying for the anti-scorbutic extracts provided by the Government to offset the deficiencies of pasteurised milk, what other steps are being taken to offset these deficiencies?

Mr. Mabane: No, Sir. I am not aware of the fact stated in the first part of my hon. Friend's Question. Previous to the 1st of this month the scheme for the distribution of vitamins was limited to children. It was then extended to expectant mothers, but no information is yet available as to the number who have applied for the vitamin preparations being distributed by my Department. It is also not correct to say that the vitamins are being issued in order to offset the deficiency of pasteurised milk. In these circumstances the last part of the Question does not arise.

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Bread (Vitamin E)

Sir P. Hurd asked the Parliamentary Secretary to the Ministry of Food what information he has as to the effect upon human fertility of the removal or inadequate replacement of vitamin E in the bread now in general consumption?

Mr. Mabane: I am advised that experts are not in agreement regarding the influence of vitamin E on human fertility. Vitamin E is a natural constituent of the germ of wheat. Having regard to the steps now being taken to ensure that national wheatmeal flour and bread contain as much of the germ as possible, there are no grounds for regarding the bread in general consumption at the present time as inadequate in respect of this vitamin.

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Horse-Shoes

Mr. Colman asked the President of the Board of Trade whether, in view of the large number of horses now being used on the road he will consult with the National Master Farriers' Association with a view to encouraging the frog method of shoeing whereby thinner steel shoes are employed and the frog of the horse's foot is allowed to come more fully into play?

Mr. Dalton: I will certainly discuss my hon. Friend's suggestion with the National Master Farriers' Association.

COLONIAL WELFARE

Stating that the rest of the world was concerned with the welfare of British colonial dependencies, Lord Hailey said in Toronto recently that "third party" interest in the self-government of colonial dependencies must be respected.

Addressing the Empire Club, he declared: "This is what we would do—we would institute a Regional Council, consisting not only of colonial Powers but other nations interested in the area in which the dependencies lie. There might, for instance, be such a council for the Pacific area, another for the African area, and a third for the West Indies. They would have the definite function of advising on the progress achieved both in political and social matters in the areas with which they are concerned. They would, in particular, make a periodical review of progress toward self-government."

Lord Hailey headed a delegation from Great Britain who went to Canada to attend a conference of the Royal Institute of Pacific Relations.—*Reuter.*

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THE WEST INDIES: ANGLO-U.S.A. COMMISSION

Joint British and American schemes for dealing with problems in the West Indies caused by the war and increased by the enemy submarine menace were mentioned by Sir Frank Stockdale and Mr. Charles Taussig, joint chairmen of the Anglo-United States Caribbean Commission, at a conference held at the Ministry of Information in London.

The Commission is endeavouring to bring about a greater production of foodstuffs in the islands to make them more self-supporting, and in the last two years, largely stimulated by war conditions, considerable progress has been made. The schemes now in operation or contemplated represent a new policy which is being supported by funds from the British taxpayer. While there has been some under-nutrition among the inhabitants, there is actually no malnutrition, and there has not been any serious reduction in the general standard of living.

A total of nearly 120 schemes has already been approved under the Colonial Development and Welfare Act, 1940, and including schemes now being considered an expenditure of over £5,000,000 may be expected. A great acceleration will take place in the preparation of welfare schemes. The only difficulty has been, and still is, the shortage of material, and every effort is being made with the help of the United States to overcome it.

Parasitic Gastritis in Sheep

Field Trials with Phenothiazine and Mineral Supplements

By

W. LYLE STEWART and H. DRAPER CROFTON,

King's College, Newcastle-upon-Tyne

It has frequently been observed that while pastures regularly dressed with basic slag, etc., improve considerably in appearance, there is no corresponding improvement in the condition of sheep and lambs grazing on them. In spite of greatly improved swards, which confer obvious benefit to cattle, reports show that these pastures not only fail to carry more sheep, but there is actually a higher incidence of unthriftiness and parasitic disease among the lambs. It has often been noted that the "best" pastures frequently produce the worst lambs, and this cannot be attributed solely to over-stocking. Thus, so far as sheep are concerned, the farmer is apt to regard the slagging of pastures and the production of abundant clover swards with mixed feelings, since it is so often accompanied by unthriftiness in the lambs. This may be due to the presence of gastro-intestinal parasites, but anthelmintic treatment does not entirely obviate the trouble. Lately it has been suspected that there is a close association between mineral deficiency in lambs and their susceptibility to parasitic troubles.

It is possible that pasture improvement may be somewhat one-sided and produce a disturbance in the balance of the mineral content of herbage; if so, this may be a factor contributing to parasitic disease, especially in young animals. In 1941, it was therefore decided to test this idea in lowland flocks, and an opportunity presented itself of combining worm treatment with mineral supplements on farms which, despite improved pastures, had nevertheless a history of much unthriftiness and parasitic disease among the lambs.

The Experiment

Trials were made on two farms. The anthelmintic chosen was phenothiazine which previous tests had shown to be reliable (Stewart and Crofton, 1941). The mineral supplement contained the salts of cobalt, manganese, copper, iron and iodine.

On Farm I, 80 average lambs were separated from the main flock in June, and each lamb was individually marked. They were then weighed and divided into four groups of 20 lambs. Lambs in Group I received 15 grammes of phenothiazine, Group II lambs received 20 millilitres of mineral solution, Group III lambs a combination of these treatments, while lambs in Group IV received no treatment and served as controls. Faeces samples were taken from certain marked animals. The experimental and control lambs ran together in one flock throughout the test on improved pasture. The doses of phenothiazine were repeated monthly, the mineral solution being administered every fortnight.

The arrangement of the experiment on Farm II was similar to that on Farm I, but here 100 lambs were used, being divided into five groups of 20 each. Groups I, II, III and IV were treated similarly to the corresponding groups on Farm I. Group V received a smaller dose of phenothiazine, namely, 5 grammes monthly.

Egg counts were made by Taylor's modification of the Gordon-Whitlock method. In this technique the volume counted is equal to one-hundredth of the total sample. Ten counts were made on each sample and an estimate of the number of eggs per gramme may be made from Table IV.

Table I—Farm I

Showing Average Group Liveweights

Group Treatment	Average Weight in Lb.		
	June 4th	July 2nd	July 30th
I. Phenothiazine	56·5	75·25	91·0
II. Trace elements	55·3	73·70	87·90
III. Trace elements and Phenothiazine ..	55·5	73·15	88·0
IV. No treatment (controls)	59·2	72·60	87·20

Table II—Farm II

Showing Average Group Liveweights

Group Treatment	Average weight in Lb.			
	June 13th	July 11th	Aug. 8th	Sept. 5th
I. Phenothiazine	43·4	58·3	66·8	75·2
II. Trace elements	45·6	61·4	68·3	76·7
III. Trace elements and Phenothiazine	44·2	60·9	70·3	80·0
IV. No treatment (controls)	45·9	59·4	66·6	72·8
V. Phenothiazine (low dose) ..	45·7	59·6	64·6	72·7

Table III—Farm II

Showing Mean Liveweight Gains in Lb.

Group	Mean	No. in Group	Range
I.	31·6	19	19–42
II.	31·1	19	21–41
III.	35·8	20	26–45
IV.	26·9	20	3–40
V.	27·0	20	15–39

Table IV—Farm II

Showing Total Worm Egg Counts Before and After the Experiment (10 Counts per Sample)

	No Minerals		Minerals	
	Before	After	Before	After
No Phenothiazine ..	87	477	88	198
	103	483	73	140
	33	390	115	266
	57	504	138	278
	96	517	142	241
Phenothiazine ..	187	21	88	21
	78	18	43	19
	136	7	106	8
	57	28	67	9
	81	17	43	18

Note: To convert these figures to e.p.g. multiply by 10.

Discussion and Conclusions

Statistical analysis (see Section by Professor Fisher) has shown that randomisation had not been effective on Farm I. No conclusions, therefore, can be drawn from the figures, and the details of egg counts are in consequence not shown.

On Farm II the treated Groups I, II and III made significantly higher weight gains than the untreated control Group IV. It can be concluded therefore that both anthelmintic treatment and mineral dosing were beneficial, and that a combination of the treatments produced the best results. Considering the history of unthriftiness among the lambs on this farm and in this area it is not surprising that anthelmintic treatment (phenothiazine) proved beneficial. It should be noted, however, that 5 grammes of phenothiazine proved an insufficient dose. No conclusions can be drawn from the experiment on Farm I. (See subjoined analysis.)

The analysis of the worm egg counts based on Fisher's Analysis of Covariance as used by Peters, Leiper and Clapham (1941) shows an interesting result. As anticipated, there is a significant reduction in the number of eggs passed by lambs treated with phenothiazine. Analysis of the figures gives no indication of any effect of minerals on the worm egg counts.

From the results of this experiment it appears that mineral deficiency and parasitic infestation both depress liveweight gain in lambs. It is to be noted that the experiment was carried out on what are considered good feeding pastures in contradistinction to hill pastures (Northumberland) where it is known that mineral deficiencies and parasitic infestations are both associated in causing unthriftiness (Stewart and Piercy, 1935, Stewart and Ponsford, 1936). Rowlands and Harbour (1941) drew attention to a condition of unthriftiness or pining among lambs on permanent pastures in North Wales, and in 1940 carried out controlled tests at three centres. At one, mineral deficiency (probably cobalt) was clearly responsible, while at the second centre the trouble was overcome by the use of phenothiazine and was therefore presumably due, mainly if not entirely, to parasitic worms. At the third centre, the condition appeared to be due to a combination of worms and mineral deficiency. From the evidence put forward it may be concluded tentatively that parasitic disease and mineral deficiency are associated factors in producing unthrifty lambs in many areas in Britain. More extensive trials are needed before generalisations can be made, but the important implications for sheep husbandry of the above conclusions cannot be too strongly stressed.

Summary

Field trials were made on two farms, the lambs in each trial being divided into groups of 20, and all maintained under identical conditions on each farm. Four groups were given phenothiazine, mineral solutions, phenothiazine and mineral solution and no treatment respectively. From the results which are statistically analysed, all the treatments were successful, the combined treatments being most successful on one farm. No conclusions are drawn from the experiment on the other farm.

Acknowledgments.—Thanks are due to the Agricultural Research Council for providing part of the phenothiazine for this experiment.

Thanks are also due to Professor R. A. Fisher for his help, and for the statistical treatment of liveweight gains.

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STATISTICAL ANALYSIS OF INITIAL AND FINAL WEIGHTS

by

Professor R. A. Fisher

I have made an analysis of covariance using initial and final weights to ascertain what allowance should be made in comparing the final weights for differences recorded in the initial weights of each sheep.

Farm I.—For all comparisons among sheep treated alike the best average allowance is 1·05 lb. which, of course, gives results scarcely different from a straight comparison of weight increase. What shows differentiation between different sets is that the appropriate allowance judged from comparison within Group IV is less than ½ lb., while from all the other three flocks more than 1 lb. allowance should be made.

The heterogeneity in this respect is quite significant.

The figures I find are :—

	D.F.	Sum of Squares	Mean Square.
Heterogeneity			
Among regressions	3	396·09	132·03
Remainder ..	71	2,011·70	28·33
Total	74	2,407·79	

As the set which were abnormal in their regression was also the only set showing variation in the final weight, I think there is no escaping the conclusion that, on this farm, failure of randomisation has upset the results.

Farm II.—On internal evidence I do not think any such objection can be made to the experiment on Farm II. For the five flocks used here the regressions seem perfectly homogeneous. Applying the same test I obtain the following analysis.

	D.F.	Sum of Squares	Mean Square.
Heterogeneity			
Among regressions	4	228·339	57·084
Remainder ..	88	4,541·96	51·613
Totals	92	4,770·29	

The adjustment 1·185 lb. in final weight for each lb. difference in initial weight gives the following comparisons :—

	Difference in Mean Weight
Phenothiazine *versus* control	5·147 lb.
Phenothiazine + minerals *versus* minerals ..	5·134 ,,
Average	5·140 ,,
Phenothiazine 5 grammes *versus* control ..	0·190 ,,
Minerals *versus* control	4·021 ,,
Phenothiazine + minerals *versus* phenothiazine	4·008 ,,
Average	4·014 ,,

It will be seen that there is practically an additive effect of phenothiazine and of minerals and no appreciable interaction. These two main effects are unquestionably significant.

MODERN TREATMENT OF BURNS

Speaking to the Glasgow Branch of the Pharmaceutical Society on the treatment of burns, Professor J. P. Todd said that half the trouble met with was due to the wound becoming infected. Emulsified cod-liver oil cream, with the addition of sulphanilamide, had given marvellous results, but equally satisfactory results had been obtained using other oils. The application of an oil-in-water emulsion with the property of a solid cream acted as a bland protective dressing and could be used as a basis for a medicament such as sulphanilamide.

STATISTICAL ANALYSIS OF WORM EGG COUNTS BEFORE AND AFTER TREATMENT

By

H. Draper Crofton

Farm II.—Analysis of Squares and Products of before and after Treatment Variance (using logarithms of egg counts)

Source	x²	xy	y²	D.F.	Variance
1. Minerals ..	0·001393	0·004553	0·212654	1	0·212654
2. Phenothiazine	0·005951	0·238550	8·777197	1	8·777197
3. Interaction ..	0·169981	-0·129280	0·083088	1	0·083088
4. Error ..	0·542650	-0·069607	6·402087	16	0·400130
Total ..	0·719977	0·044217	15·475027	19	0·814475

Where D.F. = degrees of freedom.
x = before treatment data.
y = after treatment data.
Standard dev. = 0·9024.
b = regression coefficient of y on x.
= 0·1284.

Analysis of Variance of Adjusted Counts (y-bX)

Source	Sum of Squares	D.F.	Variance
Minerals	0·21384	1	0·21384
Phenothiazine ..	8·83855	1	8·83855
Interaction	0·05269	1	0·05269
Error	6·39315	15	0·42621
Total	15·49823	18	

Minerals therefore have had no significant effect on the egg counts.

Calculation of Reduced y²

	x²	xy	y²	Reduced y²	D.F.	Variance	V.R.
Phenothiazine	0·005951	0·238550	8·777197	8·73418	1	8·73418	20·4
Error ..	0·542650	-0·069607	6·402087	6·39315	15	0·42621	
Total ..	0·548602	0·168942	15·179284	15·12733	16		

Phenothiazine therefore has had a very significant effect in reducing the worm egg counts.

SCOTTISH LIVESTOCK IMPROVEMENT

Heavy Horse Breeding.—The Department of Agriculture for Scotland announces that, with a view to encouraging heavy horse breeding, it is prepared to offer financial assistance in 1943 to a limited number of heavy horse breeding societies in Scotland which comply with the regulations and requirements and have been accepted and placed on the Department's list of approved societies. Assistance will, as in 1942, take the form of a direct grant to societies which hire approved stallions, and in addition a premium grant may be awarded to assist small farmer members of a society to have their mares served by the approved stallion at a reduced service fee to be fixed by the society. Societies which desire to apply for assistance should submit their applications not later than March 1st, 1943, on the prescribed form which, with full particulars of the scheme, may be obtained from the Secretary, Department of Agriculture for Scotland, St. Andrew's House, Edinburgh, 1.

Cattle Improvement.—Under their scheme for the Improvement of Cattle (Premium Bulls), the Department is prepared to offer in 1943, as in previous years, financial assistance to approved Township committees and societies in Scotland, that own or arrange with neighbouring farmers for the use of bulls of premium standard for the service of cows belonging to the people included in, or represented by, the committees or societies and who comply with the conditions of the scheme. With a view to enabling committees and societies to maintain or improve the standard of bulls used, the Department have decided to offer increased premiums in respect of bulls which have not previously earned grants with the same committee or society. In this case, applications for grants should be submitted not later than January 1st, 1943.

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Weekly Wisdom

Countless critics of recent economic policies have fastened upon the paradox of poverty in an age of plenty, but fewer have dwelt upon the equally remarkable spectacle of a world whose political and economic security depends on more and better organisation persistently following leaders whose economic creed is anarchy.—*P.E.P.* (Political and Economic Planning) Broadsheet No. 174.

On the Effect of Repeated Dosing of Sheep with Phenothiazine

ANGUS FOGGIE

Veterinary Research Division, Ministry of Agriculture, Northern Ireland

This experiment is put on record as it may throw some light on the action of phenothiazine and on the resistance conferred by an attack of parasitic disease to subsequent reinfestation.

Animals.—The animals used were 26 lambs and four yearling hoggets grazing on a small island in Strangford Lough, County Down.

History.—The lambs began losing condition and scouring in July, 1941, and deaths occurred in August and September. Seven animals died before the case was brought to our notice. The seventh carcase was brought to the Laboratory on September 30th for *post-mortem* examination. It was found to be emaciated and to be harbouring large numbers of Trichostrongyles—mainly *Ostertagia circumcinata* and *O. ostertagi* and a few *Haemonchus contortus*. One Monezia tapeworm was also present. A worm egg count from the faeces of this animal showed the presence of 43,900 eggs per gramme faeces. The owner agreed to put the remainder of the flock at our disposal for experiment.

Experimental

On October 4th the sheep were ear numbered, weighed and dosed with 10 grammes phenothiazine in aqueous emulsion. A worm egg count was made from a bulk sample of faeces. The sheep were dosed and weighed and the faeces were examined every 14 days until November 29th.

On December 13th the flock was split into two groups—even and odd numbers. The even numbers, twelve lambs and two hoggets (one lamb in this group was sold early in the experiment) were dosed every fortnight with 10 grammes of phenothiazine.

The odd numbers—14 lambs and two hoggets—were not dosed. Bulk faeces samples were taken and the lambs were weighed at fortnightly intervals until May 16th, 1942, when 18 animals were sold fat.

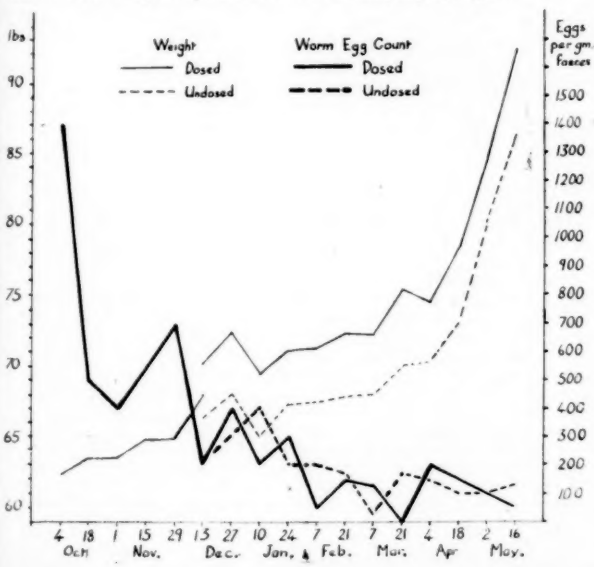
Except during a short spell of very bad weather in November the sheep were maintained on the heavily infested island pasture throughout the experiment.

Dosing was carried out by means of a 100 c.c. syringe to the nozzle of which was attached six inches of pressure tubing. The rubber tube was passed over the dorsum of the tongue and the appropriate volume of emulsion ejected. In our opinion this is a much more rapid method of dosing sheep than by using tablets and a balling gun. On no occasion was more than 5 c.c. of emulsion lost by this method.

At the beginning of the experiment an emulsion containing 10 grammes phenothiazine in 50 c.c. was used, but later a supply of May and Baker's 12 grammes per fluid ounce emulsion was obtained. This was found to be even more convenient.

Results

The average weight changes and the worm egg counts from bulk faeces samples are shown on the accompanying figure.



At the first examination of the flock seven or eight of the lambs were very emaciated and listless and it seemed unlikely that they would recover. After the initial dose, however, there was an immediate improvement in the condition of the animals, none of which died. Several animals remained very weak during the next month but eventually regained strength.

Weight.—A steady though small gain in weight was recorded during the winter, which was followed by a rapid gain in April and May.

As is shown in the figure, the sheep which were not dosed after November 29th maintained a weight chart parallel with that of the dosed sheep.

The rise and fall recorded in both curves on December 27th and on January 10th is partly explained by the fact that the sheep were very wet on the first date and were dry on the second.

Worm egg count.—After the initial dose the worm egg count fell from 1,400 eggs per gramme faeces to 400. The count rose to 700 on November 29th, but thereafter remained below 400 until the end of the experiment.

There was no significant difference in worm egg counts between the dosed sheep and those in which dosing was discontinued after November 29th.

Toxicity.—None of the sheep showed any symptoms attributable to toxic action of phenothiazine.

Discussion

The administration of 10 gramme doses of phenothiazine to a flock of lambs at once checked a severe outbreak of parasitic gastritis. Although weight records of the flock before dosing are not available, the extreme emaciation of a number of the lambs and the fact that seven deaths had occurred in the two months prior to dosing suggests that a general loss of condition was occurring. A substantial increase of weight and a marked improvement in condition was apparent after the first few doses.

It appears likely that the initial dose of phenothiazine was the effective one in bringing about this cure and that subsequent doses had no further effect on the sheep. After November 2nd, when dosing was stopped in half the flock, no difference in the progress of sheep in the two groups was noted.

The worm egg count tends to confirm this hypothesis as there was no significant difference in the counts from those two groups.

The initial count of 1,400 eggs per gramme faeces is, in our opinion, evidence of a low clinical case in sheep, but it should be borne in mind that the sample was a bulk one taken at random. If a selected sample from the worst cases had been taken it is probable that a much higher count would have been obtained. The lamb which was examined *post-mortem* gave a count of 43,900.

Counts below 500 are regarded as definitely subclinical and of negative diagnostic significance.

As the sheep were grazed on the pasture on which they contracted the disease throughout the experiment there was ample opportunity for reinfestation to occur. A flock of 1942 lambs bought in July and put on the same island were suffering from a severe outbreak of parasitic gastro-enteritis in early October.

It is a well-known phenomenon that animals which have recovered from an attack of worm parasites are preimmunised against further infestations of the same species of worms. This immunisation is not complete but consists of the establishment of a toleration level above which all infective larvae are destroyed. The interesting point shown in the experiment under discussion is that phenothiazine does not appear to alter the toleration level in any way once it has been attained. Trichostrongylid eggs appeared in approximately equal numbers in the dosed group and in the group in which the dosing was discontinued, throughout the five months during which they were under observation.

The experiment gives two possible pointers as to the mode of action of phenothiazine:—

(*a*) The first dose of the drug may kill off a large number of parasites but at the same time may affect the alimentary tract of the host in such a manner that subsequent doses are ineffective.

(*b*) The drug may assist the resistance mechanism of the host to bring the infestation rapidly down to the toleration level and may have little toxic effect on the worms directly.

The second hypothesis seems more likely to be the correct one.

In a previous article (*Vet. Rec.* **52**. No. 45) the author gave a series of worm egg counts of sheep faeces before and after dosing with phenothiazine. It was found that the phenothiazine had no apparent effect on the number of worm eggs passed by these sheep. As was pointed out by Taylor (*Vet. Rec.* **52**. No. 48) the sheep in this case were not clinical cases but were in fact at the toleration level. The average egg count before dosing was 444 per gramme faeces and after dosing 406. The dose of phenothiazine given in these cases failed to alter the host parasite balance. As this was the first time these sheep had been dosed this finding tends to confirm the second hypothesis.

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CLINICAL COMMUNICATIONS

Fatal Strongyloidosis in a Foal

C. B. DAVIDSON, M.R.C.V.S.
DALKEITH

Subject.—A Clydesdale colt foal, three-and-a-half months old. This animal was considered as a very good specimen of the breed, had been admired by many people and was the subject of sale negotiations.

History.—The colt had appeared to be doing exceptionally well, when relatively suddenly, about a week prior to my first examination, it began to show signs of unthriftiness, with a dry, staring coat, a capricious appetite and occasional bouts of diarrhoea.

On August 24th I was asked to visit and examine the foal.

Symptoms.—A dry staring coat, dejected look, condition inclined towards thinness, completely off food, temperature normal, pulse rather fast—about 80—and weak, the visible mucous membranes pale with numerous petechiae, and definite evidence of watery diarrhoea.

Parasitism was suspected. A small quantity of faeces was removed from the rectum manually and mixed thoroughly with saturated saline solution. This mixture was allowed to stand in a measure glass for about three hours. A preparation was made from the top of this mixture with a cover slip and this was applied to a slide. On examination under the microscope I was amazed to find that the entire field was covered with worm eggs of the shape of, but smaller in size than, Strongyle eggs. Large numbers of these eggs contained larvae and moreover many of the larvae were freely motile, in the egg.

At this time it was considered that they were probably Strongyle eggs the size of which had been reduced by osmosis through standing so long in the saline. However, the owner was informed of the finding and advised to administer 10 grammes of phenothiazine to the foal. At the same time another sample of faeces was obtained in order that a proper egg count could be made. As no moving stage was available for the microscope this sample was taken to Dr. D. O. Morgan, of the Zoology Department of Edinburgh University, who reported as follows: "The sample you brought in from a foal is very interesting indeed. It has a heavy infection (about 10,000 eggs per gramme) of Strongyloides (not Strongyles); species probably *Strongyloides westeri*. This is the first time that I have seen this in Scotland. . . ."

In his letter Dr. Morgan also said: "I don't know what phenothiazine will do against this species in the horse, but it is ineffective (or practically so) against *Strongyloides papillosus* in sheep." To my surprise, therefore, the foal began to feed, the diarrhoea became less evident and the foal looked generally better over the next three or four days. I had made arrangements to obtain another sample of the faeces in about a week's time. On September 5th this second sample was obtained and examined and the egg count found to be approximately the same—over 10,000 eggs per gramme of faeces.

It was now decided to change treatment to liquor arsenicalis which was given in milk, with ferri et ammon. cit. as an adjuvant to counteract the anaemia. Mönnig in his textbook has little to say about the treatment except that this preparation of arsenic over a period of about ten days has been said to give satisfactory results.

On September 7th I was informed by telephone that the foal was seen to be drinking excessive quantities of water, and gruel was, therefore, substituted for the milk to obviate irritation of the stomach with the arsenic.

On September 9th I was asked to visit the foal as it was breathing very fast, was completely off its food and extremely dejected. On examination the temperature was found to be 104° F., pulse fast and weak, the coat staring and the respiratory sounds harsh and exaggerated. No history of coughing while being drenched could be obtained, and as there had been two or three dull, damp and miserable days, it was thought that a chill had developed owing to the reduced condition of the foal. 5 c.c. S.U.P. 36 was administered subcutaneously and mustard applied to the chest wall. The foal died the same afternoon.

Post-mortem Examination.—This was not carried out till September 12th, to allow of time to ascertain what material Dr. Morgan wished to have. The findings were that the whole of the contents of the bowel were in a watery condition, but no obvious inflammatory changes could be detected in the bowel wall. There was a pale friable liver, but this may have been partly due to decomposition. There were obvious signs of anaemia in that the musculature was pale and the carcase wet. The tissue under the visceral pleura looked plump and appeared to glisten abnormally. From the cut surface of the lung a considerable quantity of fluid could be squeezed, but the larger air tubes did not contain any abnormal quantity of fluid. The condition appeared, therefore, to me to be a degree of oedema of the lung.

The small intestine was removed to Dr. Morgan's laboratory for examination and there it was estimated that the worm content was not less than 85,000 *Strongyloides westeri*.

Faeces from the dam were then obtained and though they revealed a fairly heavy infestation with Strongyles there were no Strongyloides. Another foal and its dam ran in the same park with the subject and its dam, but this foal remained in the best of health and condition and though a sample of faeces from either of these animals would have been interesting, none could be obtained because the pair were sold. These two mares and their foals are the only equines that have been on this pasture this year, and the same two mares and their foals were the only equines in the park last year. Furthermore, for at least nine years previous to last year no horses were ever grazed on this particular pasture. The pasture is a separate "let" to the owner and any field used regularly for grazing horses must be about a quarter of a mile distant.

This case is also recorded because diarrhoea in young foals is not uncommon and parasitism is a condition which might be usefully investigated in such cases.

Summary

1. Administration of phenothiazine to a flock of 30 lambs cut short an outbreak of parasitic gastritis, leaving a residual infestation in the flock.

2. Repeated dosing of half the flock did not alter their general condition and failed to affect this residual infestation when compared with the untreated half.

3. The hypothesis is put forward that phenothiazine acts by enabling the resistance mechanism of the host to reach a toleration level and that once this host parasite balance is established it has no further action.

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A Case of Open Pyometra in the Bitch

R. B. HORNBY, B.V.SC., M.R.C.V.S.
BURNLEY

It is the lot of most veterinary surgeons to meet with those cases in the bitch in which the discharge of the heat period becomes exceptionally profuse and debilitating, and continues after the date on which the heat period should end.

The discharge is red in colour, and there is marked bodily disturbance, the temperature being usually about 104° F., there is no appetite, marked thirst, and great loss of condition and lassitude.

As these cases are usually advanced when presented for treatment, and the owners do not wish for surgical intervention, other treatment has been adopted. Pituitrin, liq. ergotae, and sulphanilamide have been used without success, so a more potent ergot preparation was used and a more widely active member of the sulphonamide group.

The preparations used were ergometrine (May & Baker), 1 c.c. containing 0·50 milligrammes, and M & B 693 (May & Baker), 1 tablet containing 0·50 gm.

CASE 1.—*Subject.*—Great Dane bitch, Rita, 5 years old. When seen on July 24th, she had been discharging for four weeks. Temperature 103·6° F., pulse 100 per minute, breathing rapid, thirst great; no food had been eaten for the last four days, and during that time she had vomited twice. She was very thin and weak. 1 c.c. ergometrine was injected and she was given 1 M & B 693 four times daily. The only food allowed was milk, and she had to be spoon fed.

On July 27th, the bitch was much brighter, the temperature was 102·4° F. and the owner reported that the discharge was much less. She had vomited on the first day of treatment, but not since, and now was taking milk voluntarily. One c.c. ergometrine was injected and the M & B 693 was discontinued.

From this time onwards the recovery was rapid, and by August 8th the bitch was fully recovered. When last seen in November she was in good condition.

Two cases have been treated since at the surgery, and identical doses with the above have been given. One bitch was a 4-years-old Airedale, the other a 6-years-old crossbred. In both cases recovery was complete in a fortnight and the dogs have remained in good health since.

Some Further Observations re Stilboestrol used in Pyometra in the Bitch

J. STOREY, M.R.C.V.S.
BATH

Following the frequent occurrence of pyometra in bitches, where an operation was impossible, owing to the peculiar circumstances of either the animal or its owner, we decided to try stilboestrol as a possible remedy. After consulting various sources with regard to suitable dosage, means of administration, etc., it seemed best in our judgment to follow the suggested lines laid down for using stilboestrol in women.

The following are some of the results to date:—

Case 1.—*Subject.*—Spaniel bitch; aged 9 years.

First seen in April, 1942, for digestive disturbances, which were treated with kaolin emulsion, and corrected diet. Apparently these responded, though subsequent history suggested that this was an early phase of pyometra.

On July 4th, 1942, the bitch was seen again; this time with very extended abdomen, a slight rise in temperature, and some discoloured discharge from the vagina.

On July 6th, 1 mg. stilboestrol was given subcutaneously. No visible change resulted. Repetition of this dosage on the three following days produced a steadily increasing volume of discharge.

On July 10th, the bitch starting vomiting. An attempt was made to control this with chloretone, but on July 12th she died. A *post-mortem* examination was not possible.

Case 2.—*Subject.*—Spaniel bitch; aged 12 years.

First seen on July 27th, 1942, when she appeared very exhausted and showed every sign of advanced toxaemia.

On July 28th, 1 mg. stilboestrol was given subcutaneously. The following day there was a profuse discharge from the vagina, which continued until the 31st of the month, when a second dose of 1 mg. was given subcutaneously.

The bitch was visited daily and sulphanilamide was given in tablet form, dosage being 7½ gr. three times daily; but as the discharge continued very freely a third injection of stilboestrol was not given until August 7th.

On August 8th, the bitch was very weak and the owners decided to have her destroyed. Again it was not possible to make a *post-mortem* examination.

We are hoping to continue with these trials as and when circumstances allow.

The brand of stilboestrol used was Paines and Byrnes, Ltd., "Pabestrol." We are greatly struck by the smallness of our doses in comparison with those used by Messrs. Watson, Hancock and Smith Leask, Ms.R.C.V.S. We also suggest, in admitted ignorance, that death followed too great an absorption of toxic material from the infected wombs, due to the increased blood flow caused by the action of the stilboestrol, so that the whole system was "flooded" with toxins at a time when it could not stand this increased burden. We suggest, further, with due humility, that stilboestrol given by the mouth, in conjunction with a member of the sulphanilamide group, over a period of time, with or without vaginal douching, might afford a more satisfactory result.

In regard to douching, we use euflavine solution 1:10,000, or pot. permang., both at blood heat, but doubt if this does more than wash out the vagina and the cervix of the uterus, as we consider the irrigation of the actual uterus practically impossible, in the greater number of cases, owing to its smallness and inaccessibility.

These notes are offered in the hope that they may add to what is known at the moment on the use of stilboestrol in pyometra.

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Stilboestrol Dipropionate in Retained Foetal Membranes in the Bitch

JOAN O. JOSHUA, M.R.C.V.S.
FINCHLEY, N.3

Subject.—3½-year Pekingese bitch, primiparous.

History.—Whelped four puppies during the night of November 20th-21st. The owner telephoned the following morning, some seven hours after the delivery of the last puppy, to say that the set of foetal membranes was retained.

Examination.—Temperature 103°. No part of the membranes was palpable *per vaginam*. Abdominal palpation revealed the affected placental area to be well forward in the uterine horn. The usual manipulation through the abdominal wall did nothing to loosen the membranes, the impression being that the placenta was still firmly adherent to the uterine mucosa.

Treatment.—Injection of 1 mgm. stilboestrol dipropionate intramuscularly.

The foetal membranes were voided about four hours after the injection without further treatment of any kind. Uterine involution proceeded normally from this time.

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Stilboestrol and Misalliance

CHRISTINA G. GRIEVE, M.R.C.V.S.
AYLESBURY

Subject.—2½-year-old mongrel bitch of sheepdog type.

History.—She had come into season 4½ weeks before and during the heat period had not been kept under control. At first it was thought that she had not been served, but later the owner noticed a change in temperament and a tendency to fatness, suspicious of pregnancy.

Examination.—Examination on October 17th revealed no definite evidence that the bitch was pregnant.

Treatment.—At the owner's wish 2 c.c. of "Hypoloid" stilboestrol dipropionate (B. Wellcome & Co.) were administered intramuscularly. It was explained to the owner that stilboestrol had been used successfully in the treatment of misalliance only when it was administered within 36 hours after service.

Course.—2½ days after the stilboestrol was injected the bitch appeared to come into season again, showing a typical bloodstained mucoid discharge and an oedematous vulva. She was, therefore, kept securely kennelled for two weeks.

On November 26th the bitch was again presented by a bewildered owner who complained that, only three weeks before, we had been keeping the poor dog behind bars because she was on heat, yet now she looked as if she might whelp very soon.

Abdominal and rectal palpation revealed two fully formed puppies, one in each horn of the uterus, and there was quite a copious supply of milk from the mammary glands.

Within a few days the bitch whelped, producing full-term live foetuses, apparently the result of service at the first heat period.

In this case, the injection of stilboestrol produced oestrus yet failed to cause abortion.

REVIEW

[THE APPLICATION OF ABSORPTION SPECTRA TO THE STUDY OF VITAMINS, HORMONES AND CO-ENZYMES. Morton, R. A. (1942.) Department of Chemistry, the University of Liverpool. Adam Hilger, Ltd., Camden Road, London, N.W.1. 2nd edition. 226 pp. Demy 8vo. 28s. net.]

The purpose of the book is to correlate the methods and results of spectroscopic research as applied to the fields of nutrition, endocrinology, physiology and biochemistry. All technical details have had to be summarised, but numerous references to accounts of the complete technique involved are given. This review, although of primary interest to the pure chemist, should serve to familiarise workers in the various departments of biology with the principles of spectroscopic technique and the interpretation of experimental results. It will also supply spectroscopists with valuable comparative data derived from biological, chemo-synthetic and chemo-analytical methods of determination. In extending a promise of invaluable information from the application of spectro-photometric methods of analysis, when perfected, to larger molecules, the book demonstrates the applicability of these methods to the proteins of physiological fluids and possibly to those involved in immunological reactions. The graphs of absorption spectra quoted from recent papers, the illustrative charts of chemical structure and corresponding absorption spectra, and the numerous references, inserted in full in the best place to facilitate their use by the reader, are outstanding features of the text. These, with the additional advantage of an author as well as a subject index, make the volume a useful reference book.

At the annual meeting of the British Standards Institution, the Chairman, Sir Percy Ashley, reported that the Government had recognised the Institution as the body for the issue of national standards, with the exception of those issued by the Medical Research Council through the National Institute of Medical Research, and those included in the British Pharmacopoeia and the British Pharmaceutical Codex. The total number of standards now issued amounts to 1,300.

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Jan. 5th and 6th.—First Annual Conference of the Veterinary Students' Association of Great Britain and Eire, at the Royal Veterinary College, Streatley, nr. Reading.
Jan. 6th.—Meeting of the Editorial Committee, N.V.M.A., 2.30 p.m.
Jan. 12th.—R.C.V.S. Committee Meetings, Royal Station Hotel, York.
Jan. 13th.—R.C.V.S. Committee and Council Meeting, York.
Jan. 15th.—Meeting of the Sussex Division, N.V.M.A., at Brighton; informal luncheon 1 p.m.; meeting 2.15 p.m.
Jan. 16th.—Meeting of the Society of Women Veterinary Surgeons at Birmingham.

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PERSONAL

Births.—Dall.—On December 22nd, 1942, at Torquay, to Mona (*née* Masson), wife of John Ambrose Dall, B.Sc., M.R.C.V.S., a son.

Orr.—On December 18th, 1942, to Rose Mary, wife of Arthur B. Orr, 63, Moat Drive, Harrow, a son.

Willis.—On December 24th, at Liverpool, to Pamela (*née* Haighton), wife of George A. Willis, M.R.C.V.S., a daughter.

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Forthcoming Marriages.—Bowett—Glover.—The engagement is announced between John Bowett, M.R.C.V.S. Avenue House, Worksop, younger son of Mr. J. Bowett, M.R.C.V.S., and Mrs. Bowett, Manor Lodge Farm, Worksop, and Drucilla Ellen, only daughter of Mr. and Mrs. S. Glover, Corner Garth, Leadhall Lane, Harrogate.

Bagenal—Maxted.—The engagement is announced between Pilot Officer Beauchamp Bagenal, R.A.F., second son of Mr. and Mrs. Hope Bagenal, Leaside, Hertingfordbury, Herts, and Joan Elizabeth Maxted, M.R.C.V.S., only daughter of Mr. and Mrs. C. Maxted, Lower Garrington, Littlebourne, Canterbury.

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R.C.V.S. OBITUARY

Thomson, James Hamilton, Capt. late R.A.V.C. (T.F.). Dunstaffnage, Fountain Road, Golspie, Sutherland. Graduated London, December 21st, 1906. Died (suddenly) December 24th, 1942.

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The Late Dr. Hedley Golledge

In our issue of December 19th we recorded, with deep regret, the death of Hedley Charles Davys Golledge, Dr. Vet. Med. (Zür.), F.R.C.V.S., of Pickett Witch, Yeovil, Somerset, member of a family well known in veterinary circles, and a valued representative of the Mid-West Division on the Council of the National Veterinary Medical Association.

Dr. Golledge, who was the second son of the late Major C. Hedworth Golledge and Mrs. Golledge of Holywell House, West Coker, qualified from the London College in 1910 and in 1911 was appointed veterinary inspector for the Ministry of Agriculture. His work took him all over England, but in the early years of the Great War he was for a time at Whitehall. In 1917 he obtained the Fellowship Degree. Five years later he was elected a Fellow of the Royal Society of Medicine and in the same year to membership of the Royal Institute of Public Health. In 1931, following research work in pathology at Zurich University, he obtained his doctorate degree in Veterinary Medicine. His wife was with him part of the time in Zurich assisting him in his laboratory work, and in 1933 they both revisited Zurich for the University's centenary celebrations.

Dr. Golledge retained the staff appointment for 11 years, relinquishing it in 1921, when he went to Yeovil as local veterinary inspector for the Ministry, and took over the practice of the late Mr. Tom Symes, M.R.C.V.S. He was veterinary inspector for the borough of Yeovil and honorary veterinary surgeon for Yeovil Agricultural Show and the Cattistock Hunt.

Since the outbreak of war Dr. Golledge has been Divisional Organiser for South Somerset District of the National A.R.P. (Animals) Committee.

A Freemason he joined the Albion (No. 9) Lodge, in London, one of the oldest in the world, and in 1921, when he was 32 was installed as Master—the youngest Master then known. Freemasons of Somerset were associated with the ceremony of laying the foundation stone of St. Andrew's Church, Yeovil, and the pulpit was the gift of Dr. and Mrs. Golledge.

Deep sympathy will be extended to the widow and three children—Captain N. H. H. Golledge, R.A.M.C., serving overseas, Surgeon-Lieutenant A. H. Golledge, R.N.V.R., and Miss Betty Golledge, W.R.N.S.

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ROYAL ARMY VETERINARY CORPS

Mention in Dispatches

Announcement is made in the issue of *The London Gazette* dated December 15th, 1942, that the King has been graciously pleased to approve that Major W. L. Swinton be Mentioned in recognition of gallant and distinguished services in Waziristan.

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THE LISTER INSTITUTE

Sir John Ledingham, F.R.S., will retire on March 31st from the post of Director of the Lister Institute of Preventive Medicine, which he has held from 1930. He will be succeeded by Dr. A. N. Drury, F.R.S., Huddersfield Lecturer in Special Pathology, University of Cambridge.

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FOOT-AND-MOUTH DISEASE

Over the holiday period the existence of foot-and-mouth disease was confirmed among cattle at Conon Bridge, near Dingwall, Ross and Cromarty. Owing to the mountainous nature of the country and the consequent difficulty of defining an infected area extending only to about 15 miles from the infected farm, it has been necessary to include an area of 30 to 40 miles from the premises on which the disease exists.

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LEGAL NOTES

Neglected Cattle.—At Clare Petty Sessional Court, reports the *East Anglian Daily Times*, and at the instance of the R.S.P.C.A., Geo. Wm. Last, stockman, Hundon, was summoned for causing unnecessary suffering to a cow between November 11th and 22nd; to another cow between November 14th and 21st; and to two bulls and 18 cows between November 14th and 21st. His employer, Douglas B. Watkinson, farmer, Hundon, was summoned for permitting. Last was fined £3 in the first case and £1 for the second, and acquitted on the third charge. Watkinson was fined £20 and 6 gns. costs on the first case and acquitted on the second and third.

Mr. Alan Phillips prosecuted and Mr. R. Long defended.

Inspector Newbury spoke to seeing in a gully and aged in-calf Red Polled cow lying with her back near to a felled tree trunk. The animal was in a deplorable state, extremely emaciated and so weak that she was unable to make any attempt to rise. There was some hay and a pail, half-full of water, near her head, but out of her reach. They saw Last, who, in a statement said that on November 11th the cow was found lying on the side of the brook, wedged behind two tree trunks. A tree trunk was pulled away from the cow with a tractor, but the animal could not get up. Last informed his employer, who also tried to get her up. Afterwards hay and water had been taken to the animal daily. She got weaker, however, and Last understood that Watkinson had 'phoned a knacker. Subsequently he saw Watkinson, who said he gave orders for the cow to be looked after properly, and, to the best of his knowledge, she was.

Mr. P. R. Turner, veterinary surgeon, Bury St. Edmunds, said the cow was in a very advanced state of emaciation and dejection. "The case was such," he said, "that, on the grounds of humanity, I gave instructions that she should be slaughtered forthwith."

With regard to the second charges, Inspector Newbury said at Thicks Farm, Hundon, he saw a red-and-white Shorthorn heifer, extremely lame and totally unable to put its foot to the ground. She was extremely emaciated and other animals were knocking her about. Last stated that the heifer had gone lame about a week previous. Watkinson said, "I had no knowledge that it was lame. If I had known I should have seen that it was properly treated, and, in fact, it has now received treatment."

Mr. Turner said the heifer was in pain to such a degree that she was almost entirely unable to put any weight on her right foreleg. Last admitted that the heifer was "on three legs" when the inspector saw her.

Watkinson said Last did not speak to him about the heifer until after the visit of the Inspector.

In the third case, Inspector Newbury said in Thicks Farm stockyard he found two bulls and 18 cows and heifers in varying degrees of condition, from emaciated to fair. They were "milling" about, eating loose, dirty straw. When P.C. Richardson threw some hay amongst them the larger ones knocked the smaller ones about in getting the food, one beast being actually knocked off

its feet. Last said the cattle came to the farm three weeks previous and had improved in their condition since. "Some of the cattle are very poor," he said, "and are not really fit to be about. I give them all the food that I can, but, of course, their condition is like this because we have not any corn." Watkinson said, "I live away from the farm. I have Last to look after them and he ought to feed them properly, and do them well, because there is plenty of food on the place."

Mr. Turner said Last told him that the total milk yield from the herd was six pints a day.

Watkinson replied that the herd was dry and in-calf, and also stated the quantities of food available on the farm, whilst Last said the animals came to him "none too fresh," but under his feeding were improving.

Mr. E. A. Burgon, veterinary surgeon, Haverhill, said the condition of the herd was poor, but there was plenty of food available for them.

In dismissing the last case the Chairman (Mr. D. M. Gurteen) said the Society was quite right in bringing it forward for investigation.

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Poultry Blood Test Lawsuit.—Damages amounting to £2 357 with costs were awarded by Lord Justice du Parcq in the King's Bench Division in London in a case concerning members of the Lancashire Utility Poultry Society of Preston. Plaintiffs were the Bradley Egg Farm, Ltd., of Alresford, Hampshire, and the defendants Messrs. Guy Clifford, of Ormerod House, Great Eccleston, and James Sutton, of the Clifton Poultry Farm, Clifton (President and deputy President respectively of the Lancashire Utility Poultry Society), Mr. T. Ellery Stuart and 13 other members of the Society. Plaintiffs claimed against all the defendants except Stuart damages for breach of contract and negligence and against Stuart damages for negligence. The claim was for over £2,000 in consequence of the death of about 2,000 head of poultry from fowl typhoid.

In the autumn of 1939, said Mr. E. A. Sellers, K.C., for plaintiffs, Mr. Stuart tested a large number of plaintiffs' birds for bacillary white diarrhoea. As a result of the tests over 2,000 birds died—not from B.W.D. but from fowl typhoid.

Plaintiffs' case was that the antigen used for the tests contained live typhoid germs and the birds contracted fowl typhoid and died.

The case for defendants was that the tests were properly carried out by Mr. Stuart, who took every precaution.

In giving judgment, Lord Justice du Parcq said that everything pointed to the fact that the antigen contained typhoid germs. He did not think there was any probability that there would have been an outbreak of typhoid had it not been for the fact that infected antigen was used. Plaintiffs no doubt had suffered damages.

Following legal arguments, the Judge entered judgment in favour of the plaintiffs against all the defendants for £2,357, with costs. A stay of execution was granted, pending consideration of an appeal. —*Preston Guardian.*

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MINISTRY'S WARNING TO POULTRY BREEDERS

With the approach of another hatching season the Ministry of Agriculture warns all poultry breeders of the grave risks attending the feeding of clear eggs and incubator waste to birds used for breeding purposes. These eggs may have been laid by B.W.D. "carrier" hens and may therefore be infected with the organism responsible for that disease. This organism multiplies rapidly in the warm humid atmosphere of the incubator, and at candling time, or when the hatch is taken off, infected eggs are literally teeming with organisms. If they are fed in the mash, a large proportion of birds will become "carriers" and reactors to the blood test. Though the risk of spreading the disease is, of course, greatest where the eggs have come from heavily infected stock, it must be borne in mind that even in flocks where the last blood test was completely negative, infection may be present owing to the introduction of the disease after completion of testing.

The folly of feeding clear eggs to breeding stocks is illustrated by the experience of a breeder with a clean flock who during the last hatching season incubated eggs for a neighbour, three-fourths of which proved to be infertile. These were fed in mash by the breeder to his own flock, with the result that when the birds were blood tested for B.W.D. in the following September more than half of them reacted.

Breeders are, therefore, strongly advised in their own interests to burn or bury, well apart from any poultry, all infertile eggs not sold, all egg shells and other incubator waste, and all dead in shell and cull chicks.

The feeding to breeding stock of raw swill containing egg shells and reject eggs, though less dangerous than the use of incubator clears, is also most inadvisable. Such swill should be boiled for at least one hour before use.

THE CAUSE OF DEATH IN RUMINANTS HELD ON THEIR BACKS

The fact is generally recognised that when a deep-chested animal is kept on its side or back for over a few hours often it will die. Fat sheep, for example, often will be found dead after being on their backs for relatively short periods of time.

The belief is current that the cause of death is an accumulation of gas in the rumen, which the animal is unable to eructate. The distended rumen is thought to cause asphyxia by obstructing normal diaphragmatic movements.

In experiments which were carried out for other purposes, Visscher and Petersen[1] had an opportunity to observe the exposed lungs of anaesthetised goats while held on their backs for a few hours. They found that the lungs became markedly congested and enlarged, and eventually bloody fluid filled the bronchi and trachea.

Accordingly, experiments were carried out for the purpose of investigating this phenomenon, systematically. Animals were placed on their backs, and the respiratory and heart rates were observed. The animals were electrocuted at the end of the experiment. In all experiments the respiratory rate was observed to increase markedly after about 30 minutes, while the heart rate did not change appreciably. Three goats were kept on their backs until they died. Eructation was observed to be normal throughout the experiment. The rumen did not become tympanitic. To rule out accumulation of gas completely, however, a trocar was inserted into the rumen and the gas released. This produced no observable effect on respiration. Toward the end of the experiment the animals had great difficulty in breathing, were in marked distress, and appeared cyanotic. No abnormal abdominal tympany was present at the time of death. Two animals lived about 50 hours and one lived 20 hours. In the latter animal, the ventral lobes of the lung were found to have pre-existing lung lesions, accounting for the shorter period of survival.

In all three animals the autopsy revealed thick, congested, purplish lungs which did not collapse. Both sides of the lungs were involved. The dorsal lobes were more markedly involved than the ventral. The ventral lobes had numerous areas of emphysematous blebs. The right auricular wall showed evidences of congestion. Microscopic section revealed evidence of haemorrhage throughout the lung tissue and intra-alveolar oedema.

Conclusion.—A goat kept on its back develops pulmonary congestion, alveolar haemorrhage, and interstitial oedema, which are the cause of death. Sheep kept in this position for short periods develop changes identical with those found in goats held for the same period. Gas in the rumen is not related to the development of this condition.—[Alfred Greeberg, M. B. Visscher, W. E. Petersen and W. L. Boyd (1942). Paper No. 2022 Scientific Journal Series, Minnesota Agricultural Experiment Station. (*J. Amer. vet. med. Ass.* **101**. 417.).]

[1] *Visscher and Petersen: Unpublished data.*

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MINISTRY OF AGRICULTURE NEWS SERVICE

Winter Milk Production

"Why does the Ministry of Agriculture set such store on winter milk production? Why not produce it cheaper in the summer and dry it for winter use?" This poser was put at a recent Brains Trust meeting on winter milk production. The answer is worth repeating. The main reason is that the people of this country, up to now at any rate, have been used to liquid milk and it has been the policy to encourage children to drink liquid milk; also the need for milk for children and mothers is greater in winter. Apart from the consumer's side, the winter milk policy means more milk throughout the year. Moreover, high summer production will not fit in with the ploughing-up policy. With such a campaign winter milk must be produced, for dependence on grass for excessive summer milk in war-time would soon lead to a shortage of grazing.

More Milk for Children

Test Shows Saving of 40 Gallons of Milk per Calf.—A gruel feeding test with National Calf Starter as a substitute for whole milk in calf rearing has been conducted at the Staffordshire Farm Institute. The preparation and feeding of the gruel were carried out in accordance with the instructions sent out with each bag of starter. At the start of the trial a number of calves were fed on a control ration of whole milk, but as the gruel-fed calves did so well, this form of feeding was discontinued. The calves reared with gruel showed satisfactory growth rates and maintained good health. About 40 gallons of whole milk was saved on the rearing of each calf. There was a saving of at least £4 per calf, reckoning

milk at 2s. 6d. per gallon and gruel at 28s. per cwt., and the extra 40 gallons of milk sold qualifies for coupons, two months later, at ther ate of 4·2 lb. per gallon—an additional ration of 1¼ cwt. of feeding-stuffs per calf.

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"Fishy" Taint in Milk

Time Interval Important When Feeding Sugar-Beet By-Products.—"Trimethylamine" to the chemist, but to the farmer it is a "fishy" smell in milk that may be brought about by the incorrect feeding of beet by-products, including molassed beet pulp. Experiments have shown that the time interval between feeding and milking is an important factor in the production of this taint. It appears that when beet tops or beet pulp are fed more or less midway between milkings, there is a greater likelihood of taint than when given immediately before or during milking. Suitable rations for the maintenance of a dairy cow would be 14 lb. hay, plus 5 lb. dried beet pulp (or 40 lb. wet) or 14 lb. hay plus 25 lb. beet tops. If beet pulp and beet tops are fed at the same time, it should be remembered that one pound of dried beet pulp equals 5 lb. of tops.

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Smoking Their Winter Milk.—In Holland cigars manufactured from sugar-beet leaves will soon be on sale. The agricultural authorities, somewhat alarmed at this use of a valuable fodder, have warned farmers they must not allow too much to be sent to the tobacco people, so jeopardising winter milk production.

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Straw Pulp

Mr. A. W. Thomas, of Longnor, near Shrewsbury, is a straw pulp enthusiast. In August, 1941, he installed a standard straw pulp plant, and during the winter made 1,400 lb. of pulp a day and fed it to his Attested Ayrshire herd at the rate of 20 lb. per cow. Previously, 80 acres of land were needed for hay, but the introduction of straw pulp has enabled this area to be reduced by 24 acres and the released land grows food for direct human consumption. Mr. Thomas is a firm believer in kale and, with straw pulp, this has meant a weekly saving of about 1¼ tons of hay and 1 ton of purchased cake in the feeding of his milking cows. No straw is sold off the farm. All is returned to the land in the form of farmyard manure.

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Pennine Cultivations

Exploiting the Rainfall—One of the largest districts in East Lancashire had, before the war, barely 50 acres of arable land. It is an area largely unsuitable for cropping, being on the Pennine range with a rainfall of about 60 inches. Over 10,000 acres have now been ploughed up. A considerable amount of kale is grown and oats where suitable, but grass got by re-seeding old and previously worthless grassland is the crop that answers best on many of these small farms devoted to milk production. The land is ploughed, limed and phosphates applied, then sown with grass and clover-seeds. Some re-seeding has been done by farmers themselves, and the War Agricultural Committee have this year put into operation a scheme whereby they will carry out the whole process. A charge of £10 an acre is made for areas over four acres and £12 for smaller areas. The farmer can either *t*epay when the work is finished, or he can spread the payment over a period of years, under the Committee's credit scheme. Already 500 acres have been re-seeded by the Committee and several thousand acres are to be regenerated in this way in 1943.

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Late Maturity

Some Hens May Deserve a Second Chance.—Eggs have not been plentiful during October and November, due largely to the fact that stock matures slowly on war-time diet. Experts have been urging the backyarder to get rid of non-layers, but don't be too hasty, for there is a risk that a bird that has not laid since the end of September, because of diet deficiencies, may be culled and sold or killed just at the time when she is coming into profit. Next year, remedy this late maturity by ordring stock hatched two to three weeks earlier than usual, say, from the middle to the end of February. In the meantime, spare your non-layers that seem bright and healthy. Egg output increases remarkably after mid-December, even from flocks whose winter records have already been reasonably good. Remember, you cannot have even production all the year round; there are harvest seasons and seasons of low output. Unless your birds are very thin or very fat, diseased or deformed, a brief period should determine whether they have failed because they are incapable of laying, or because a spartan diet was not sufficient for maintenance and production.

Feeding Laying Pullets

"Off the Ration" Swill on Test.—Trials conducted by Harper Adams Agricultural College on the feeding of laying pullets have shown that ordinary and pulverised concentrated swills, sold "off the ration" to commercial pig and poultry keepers, can, on a dry matter basis, replace up to one-third of the rationed food supply without detriment to health or egg production. Storing the swills in water prevented mould waste. While the pulverised concentrate was more palatable and involved less wastage in feeding, there was no noticeable difference in egg production and health between the two flocks.

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Applications are now to be allowed for permission to import livestock into the Isle of Man from Scotland, from which country importations were stopped some weeks ago following a foot-and-mouth outbreak there. No case of the disease has been reported in the Isle of Man for 50 years.

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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CANINE CRAMP

Sir,—I do not quite know what is the inference in the questions of Mr. A. B. Orr, but I would like to say that the analyses were carried out by a Public Analyst of repute and I have no reason to doubt his accuracy. As these drugs were given maliciously it is, of course, impossible to say exactly what doses were given. As to the question, "why should the administration of strychnine be accompanied by that of heroin?" I would suggest that the heroin was to delay the action of the strychnine, to allay the excitability, to lessen the muscular cramp and to give that feeling of confidence and well-being which I understand is one of the attributes of this drug. There are many examples one could give where two drugs, to some extent physiological antagonists, are given in the same prescription with good effect. No doubt this particular combination was well thought out, but in these cases a lethal dose was given with disastrous results.

Yours faithfully,
GEO. P. MALE.

"Westcroft,"
Earley,
Reading.
December 21st, 1942.

DISEASES OF ANIMALS ACTS, 1894 TO 1937, AND AGRICULTURE ACT, 1937 (PART IV).

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period	Anthrax	Foot-and-mouth	Parasitic Mange*	Sheep Scab	Swine Fever
Nov. 16th to 30th, 1942	23	41	1	19	13
Corresponding period in—					
1941 ...	8	—	—	19	28
1940 ...	30	27	—	16	228
1939 ...	21	1	1	22	188
Total Jan. 1st to Nov.30,1942	332	642	27	240	425
Corresponding period in—					
1941 ...	370	260	17	188	1,042
1940 ...	527	76	15	179	4,673
1939 ...	666	86	33	246	2,963

NOTE.—The figures for the current year are approximate only.
*Excluding outbreaks in Army Horses.

Tuberculosis (Attested Herds) Schemes

The number of Attested Herds, *i.e.*, herds officially certified as free from Tuberculosis as at November 30th, 1942, was as follows :—

England	Wales	Scotland	Total (Great Britain)
3,904	8,881	3,389	16,174